

FIRESTOPPING DESIGN REQUIREMENTS

A. DESCRIPTION

1. To help prevent the rapid spread of fire through fire-rated construction within a building, certain walls, floors and joints are required to meet a specific fire resistance rating – the period of time during which a building component has been tested to confine a fire or continue to perform a structural function or both. Through and membrane penetrations, perimeter barriers and fire resistive joints created during the construction process require the installation of firestop systems in order to bring the building component back to its original fire rating.
2. Through and membrane penetration firestopping is a specific construction consisting of all materials required to fill the opening around penetrating items such as cables, cable trays, conduits, ducts, pipes, steel beams, bar joists, etc. and their means of support through the building component to prevent spread of fire.
3. Fire Resistive/Construction joint and perimeter barrier firestopping is an integral part of the fire resistive assembly that allows for movement in the construction joints such as floor to wall, perimeter barrier, curtain wall joints, head of wall, etc.

B. SPECIFICATIONS

1. The standard [Dormitory Authority Firestopping Specification](#) Section 078400 shall be utilized and edited to reflect the specific project requirements.
2. Provide reference from specific trade sections (Mechanical, Plumbing & Electrical) to the above section 078400.

C. DESIGN REQUIREMENTS

1. The Design Professional shall review DASNY's Design Professional's Submission Requirements located in the [Design Professional Guide](#) on the DASNY website: www.dasny.org.
2. The Architectural life safety drawings should indicate fire resistance rating designations for building components. If no such drawings are to be provided, the individual discipline drawings must clearly indicate fire rated construction.
 - a. Fire rated walls and partitions should be indicated using graphic symbols.
 - b. Fire rated floors and roofs should be indicated by the use of notes.
 - c. These plans allow material testing agencies, owner, owner's representative, contractors and other parties bidding single and multi-contract projects to readily ascertain the extent of the fire rated building components.
3. It is recommended that references to firestopping details at junctures of wall-to-floor slab and curtain wall-to-floor slab be indicated as a "firestop system".

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- a. The specific manufacture's type and number does not necessarily have to be indicated.
 - b. The contractor shall provide specific manufacturer and catalog numbers during the submittal phase.
4. All Mechanical, Electrical & Plumbing drawings should include a general note to provide through and membrane penetration firestopping at all penetrations through fire rated construction.
 - a. The note should include a reference to the Architectural life safety drawings.
 - b. The firestopping general note should be adequate to cover all through and membrane penetration firestops.
5. Usually, no reference should be made to specific penetration firestops by use of details. When a specific detail is shown for other reasons, indicate firestopping as "firestop system". The specific manufacturer type does not have to be indicated. The contractor shall provide specific manufacturer and design number during the submittal phase.
6. If no Architectural life safety drawings are provided, the specific discipline drawings shall clearly indicate the fire rated construction.
7. For rehab projects the Design Professional needs to ascertain locations and hourly ratings of existing fire rated building components.

E. PROJECT REQUIREMENTS

1. The Firestop Schedule, pre-installation conference, field-constructed mock-up installations, fire stopping manufacturer's representative, identification labels, firestop application log and wall stenciling are all part of a total package that provides the Design Professional, contractor, DASNY and material testing agencies with the tools to monitor proper firestop application as it relates to penetration type and building component fire rated construction. Sufficient site visits shall be taken to identify issues that affect the proposed firestopping for the project.
2. The Firestop Schedule: is included in the Project Manual at the end of the Firestop section 078400. This schedule should be completed as part of the required submittal package to be completed by all prime contractors.
3. Pre-Installation Conference: This meeting should be a joint meeting attended by the Owner's Representative and all prime contractors, respective firestopping sub-contractors and firestopping company field advisor to review project requirements. The Design Professional should attend this pre-installation conference. The agenda for the conference should include the following topics:
 - Review scope of work.
 - Review shop drawings and firestop application log.
 - Review mock-up requirements.
 - Discuss identification labels and locations.
 - Review schedule, coordination and sequencing with all trades.

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- Review any engineering judgments or other special requirements.
 - Function and frequency of inspections and testing labs.
4. **Field Mock-up Installations:** Field installed mock-ups are required for each type of firestop system utilized on the project to establish standard of quality and performance.
 5. **Firestop Application Log:** A separate binder shall be prepared and kept on site for use by the Inspection Agency and the Authority Having Jurisdiction. The binder shall contain the following:
 - a. The binder shall be a three (3) ring binder.
 - b. Firestop Schedule.
 - c. All approved firestopping assemblies including engineering judgments shall be provided and organized by trade.
 - d. Copy of manufacturer's installation instruction for each firestop assembly.
 - e. A matrix or table of contents listing each assembly shall be provided.
 - f. The binder shall be updated as new firestop assemblies or EJ's are added.
 - g. The binder shall be kept on-site at a location approved by the Owner.
 6. **Contractor Qualifications:** An acceptable Firestop Contractor shall be:
 - a. Licensed by State or Local Authority where applicable, or
 - b. FM Research approved in accordance with FM Standard 4991, or
 - c. UL Qualified Firestop Contractor, or
 - d. Meet the following requirements
 - (i) Installation personnel shall be trained by the approved firestop manufacturer.
 - (ii) The installation firm shall be experienced in installing firestop systems and fire resistive joint systems similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful performance.
 - (iii) Qualifications include having the necessary experience, staff, and training to install manufacturer's products per specified tested and listed system requirements.
 - (iv) Minimum of three (3) years experience and shown to have successfully completed not less than 5 comparable scale projects and provide references.
 7. **Identification Labels:** Labeling of firestopping systems provides quality assurance, material testing agencies and the owner specific information relating to the firestop system including firestopping product names, system listing number, date of installation, installing company name. These labels facilitate future rehabilitation projects.

F. ENGINEERING JUDGMENTS

1. Where no testing agency listed firestop design exists that meet the requirements of a specific project condition, an Engineering Judgment from the manufacturer meeting the condition may be acceptable, subject to approval of the Design Professional and Authority Having Jurisdiction. An Engineering Judgment is a process whereas the firestop manufacturer provides custom drawings based on test data of like systems to accommodate particular applications. Engineering Judgments shall follow International Firestop Council (IFC) guidelines.
2. International Firestop Council Guidelines:
Firestop system engineering judgments should:
 - a. Not be used in lieu of tested systems when available.
 - b. Be issued only by firestop manufacturer's qualified technical personnel or, in concert with the manufacturer, by a knowledgeable registered Professional Engineer, or Fire Protection Engineer, or an independent testing agency that provides listing services for firestop systems.
 - c. Be based upon interpolations of previously tested firestop systems that are either sufficiently similar in nature or clearly bracket the conditions upon which the judgment is to be given. Additional knowledge and technical interpretations based upon accepted engineering principles, fire science and fire testing guidelines (e. g. ASTM E 2032 – Standard Guide for Extension of Data from Fire Endurance Tests) may also be used as further support data.
 - d. Be based upon full knowledge of the elements of the construction to be protected and understanding of the probable behavior of that construction and the recommended firestop system protecting it were they to be subjected to the appropriate Firestop Standard Fire Test Method for the required fire rating duration.
 - e. Be limited only to the specific conditions and configurations upon which the engineering judgment was rendered and should be based upon reasonable performance expectations for the recommended firestop system under those conditions.
 - f. Be accepted only for a single specific job and location and should not be transferred to any other job or location without thorough and appropriate review of all aspects of the next job or location's circumstances.
 - g. Be reviewed and approved by the project Design Professional.

G. ADDITIONAL INFORMATION

1. For further explanation, information or clarifications on the Firestopping Requirements contact the Quality Assurance - Code Compliance Unit.

End of Firestopping Guide